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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,932	08/26/2003	Jackson Jarrell Pair	028080-0109	3088

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MCDERMOTT, WILL & EMERY
Suite 3400
2049 Century Park East
Los Angeles, CA 90067

EXAMINER

LAY, MICHELLE K

ART UNIT	PAPER NUMBER
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2672

DATE MAILED: 11/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/647,932	PAIR ET AL.	
	Examiner	Art Unit	
	Michelle K. Lay	2672	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 and 32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 and 32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 August 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement filed 04/01/2005 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

Drawings

The drawings were received on 08/05/2005. These drawings are acceptable.

Response to Amendment

The amendment filed on 08/05/2005, has been entered and made of record. Claims 30, 31, 33-36 have been cancelled. The amendment to claim 15 overcomes the claim objection made in the non-final office action filed 03/01/2005. Claims 1-29, and 32 are pending.

Response to Arguments

Applicant's arguments, see pages 16-18, filed 08/05/2005, with respect to the rejection(s) of claim(s) 1-20, 29 under Richey in view of Kadowaki have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

However, upon further consideration, a new ground(s) of rejection is made in view of Richey in view of Ohshima et al.

In regards to Applicant's remarks of claim 32, the amendment to the claim does not overcome the prior art rejection in view of Richey (5,130,794). Referring to Figs. 21 and 22 of the head mounted display worn by the viewer/operator within the assembly, as the viewer/operator moves his head, the updated coordinates cause the multipliers and adders of the video effects unit (7) to update the field of view every 8 frames [col. 21, lines 8-28]. Thus, the HMD contains sensors that update the display as effected by the users line of view. Richey additionally discloses that it is further foreseen that the optical and camera arrangements disclosed in Figs. 6 – 17 may transmit their recorded image to various types of sensors such as visual, motion detection, and pyroelectric sensors [column 34, lines 57 – 61]. Therefore, Richey teaches ***sensing an interaction between the individual and the environment created by the modular walls***, and further teaches ***a processing system in communication with the sensor and the display ... based on the interaction between the individual and the environment sensed by the at least one sensor.***

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claim **32** is rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 5,310,794 to Richey.

Richey discloses a panoramic image based virtual reality display system. Referring to Fig. 34, the viewer's entire body is positioned in the large display assembly (23), in which display units surround the viewer such that the viewer sees a respective portion of the scene of spherical coverage in any viewable direction. The large display assembly (23) is comprised of a structural framework (9) and supports (10), which hold the display units (11) and optical enlarging means (12) securely in place [column 9, lines 14-23]]. The floor (130) and its associated display unit (11) beneath, to the sides, and over the viewer/operator are integrated so the viewer is presented with a substantially continuous scene for viewing [column 28, lines 15-19]. Display systems and optical enlargement means mounted on spring-hinged doors, latches, or rollers, allow the entry and exit assembly (131) to move back and forth in an open and closed position to enable viewer entry and exit [column 28, lines 28-32]. These means may also be used for easy assembly and disassembly. Richey additionally discloses that it is further foreseen that the optical and camera arrangements disclosed in Figs. 6-17 may transmit their recorded image to various types of sensors such as visual, motion detection, and pyroelectric sensors [column 34, lines 57-61]. Additionally, referring to Figs. 21 and 22 of the head mounted display worn by the viewer/operator within the assembly, as the viewer/operator moves his head, the updated coordinates cause the multipliers and adders of the video effects unit (7) to update the field of view every 8 frames. Thus, the HMD contains sensors that aide in updating the display as effected by the user.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims **1–20**, and **29** are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,310,794 to Richey in view of US Publication No. US 2003/0032484 A1 to Ohshima et al.

Richey teaches the claimed limitations of claims **1–20**, and **29**, with the exception of teaching placing at least one real, three-dimensional object within the structure. However, Ohshima et al. discloses a gaming apparatus that incorporates real and virtual objects.

In regards to claims **1–4**, **14**, and **15**, Richey discloses a panoramic image based virtual reality display system. Referring to Fig. 34, the viewer's entire body is positioned in the large display assembly (23) (claim 1), in which the viewer is surrounded by display units such that the viewer sees a respective portion of the scene of spherical coverage in any viewable direction (claims 1, 2) [column 9, lines 14 – 19]. The assembly is designed to facilitate a single or plural number of viewers (claim 16) [column 28, lines 14 – 15]. The large display assembly (23) is comprised of a structural framework (9) and supports (10), which hold the display units (11) and optical enlarging means (12) securely in place [column 9, lines 20 – 23]. The floor (130) and its

associated display until (11) beneath, to the sides (claim 4), and over the viewer/operator (claim 3) are integrated so the viewer is presented with a substantially continuous scene for viewing [column 28, lines 15 – 19]. Display systems and optical enlargement means mounted on spring-hinged doors, latches, or rollers (claim 15), allow the entry and exit assembly (131) to move back and forth in an open and closed position to enable viewer entry and exit [column 28, lines 28 – 32]. These means may also be used for easy assembly and disassembly (claim 14). Components of the display assembly cooperate to display a substantially continuous panoramic scene of spherical coverage about the viewer [column 9, lines 33]. The panoramic scene consists of a plurality of image segments that form a composite image on a single video frame (claim 1). Image segments represent portions of camera recorded scene or computer graphic information. Typically the segments represent adjacent portions of the surrounding panoramic scene. Each image segment is displayed at a designated area within the display assembly such that the recorded scene is re-formed in the same geometric or geographic orientation in which the scene was recorded [column 9, lines 48 – 54]. Additionally, referring to Figs. 21 and 22 of the head mounted display worn by the viewer/operator within the assembly, as the viewer/operator moves his head, the updated coordinates cause the multipliers and adders of the video effects unit (7) to update the field of view every 8 frames. Thus, the HMD contains sensors that aide in updating the display as effected by the user.

Ohshima et al. disclose a game apparatus within mixed reality. The locations of the player and real object are detected, and the relative positional relationship between the

player or real object, and the virtual object is recognized [*abstract*]. As shown in Figs. 2 and 3, table (100) has real objects that appear in the game. The real objects (101, 104) have location sensors (103) so that the virtual images of the game can behave accordingly. The HMD worn by the user displays the virtual object (102) as well as the table [[0100]-[0103]].

Therefore, it would have been obvious to one in the art at the time the invention was made to modify the invention of Richey to include the real objects of a mixed reality system of Ohshima et al. One would have been motivated to make such a modification so that the user feels completely immersed within the virtual reality world of Richey. The use of real objects and moveable surface area further provides the user a sense of a comfortable reality so that users may be able to physically touch three-dimensional objects without having to pretend they are objects within the space.

In regards to claim 5, it would have been obvious to one in the art that the display units located on the sides of the large display assembly of Richey may project images to one's liking, such as an image of wall texture as claimed.

Referring to claims 6–10, 18, it would have been obvious to one in the art to allow other real objects of Ohshima et al. within the virtual display of Richey to give the user a more real experience within the display assembly and due to the volumetric space within the room. Since a number of people are shown in this room, providing chairs and other objects would make for a more comfortable environment. These objects may

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include an operable door (claim 6), working window (claims 7, 8) with operable shutters (9), and dummy walls (claim 18). Furthermore, in regard to claim 10, if the object is a window or a door, it would have been obvious to one in the art that the displays behind such objects may depict images of appropriate environments that one may find when looking through such objects to simulate to the user a real environment or different location. Additionally, if the objects are dummy walls within the display assembly of Richey, multiple rooms may be created for the user (claim 18).

In reference to claims 11–13, Richey illustrates in Fig. 6 the input means for recording a panoramic scene of spherical coverage, which is the panoramic camera system including a camera (43), and which comprises a portable panoramic video viewing and recording system (27), referred to as a panoramic camcorder. The panoramic camcorder (27) is carried by a host or vehicle [column 10, lines 6-13]. It may be obvious to one in the art that the images captured by the panoramic camcorder (27) may comprise images from the real environment (claim 12). Referring to Figs. 9 – 12, the optical elements (41) are interfaced with the camera (43) to facilitate the composite image (26) being transmitted to the recording surface (42) of the camera (43) by conventional means. The recording surface (42) is directly associated with an image processor means (44) of a self-scanning solid state imaging device such as a charge coupled device located in the image plane of each respective lens element (41) (claim 13) [column 11, lines 57-65]. Referring to Figs. 6-10 and 15-17, the electrical section (45) is structured to convert the visual images received by the image processor (44) into

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electrical video signals [column 12, lines 66-68] such that the information is in a format that is compatible with standard video processing equipment [column 13, lines 1-2]. As shown in Fig. 6 and 9, the picture signal from the camera (43) is then transferred through conductor (46) to a conventional portably structured videotape recorder/player (47) [column 13, lines 14-17]. The television signal is then stored by the recorder/player (47) on videotape (claim 11) [column 13, lines 29-30].

Regarding claims 17, 19, it would have been obvious to one in the art that the real objects of Ohshima et al. may include objects that coincide with what is displayed on the screen, allowing for a simulated environment to the user within the display assembly of Richey. Such an environment may be an alleyway, as claimed in claim 19, where the real objects of Ohshima et al. may include a car. The displays of Richey may project images consisting of bricks to portray to the user that he/she is in an alleyway.

In reference to claim 20, Richey discloses that it may be foreseen that the display assembly [Fig. 32 (23)] may be used as a simulator for various kinds of vehicles [Fig. 55 (149)]. Referring to Figs. 54 and 55, the device might take the form of simulated controls (150) for such vehicles (149) as a land, sea or air vessel as claimed [column 34, lines 34-40].

Regarding claim 29, Richey discloses a stereographic field of view is arrived by sampling left and right eye fields of either of side of the orientation defined by the

position sensors [Fig. 26 (97)]. To achieve a stereographic effect, image segments [Fig. 29 (13)] for the left eye and right eye are chosen from two adjacent objective lenses [Fig. 17 (37)], each with a different, but adjacent, overlapping field of view of the visual scene. Fig. 30 illustrates the resultant stereoscopic image (101) that the image processing system has processed for stereographic display. [column 21, lines 50-62].

3. Claim **21-28** are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,310,794 to Richey in view of US Publication No. US 2003/0032484 A1 to Ohshima et al. as applied to claim 1 above, and further in view of US Patent No. 5,086,385 to Launey et al.

Richey in view of Ohshima et al. teaches the claimed limitations of claim **21-28** with the exception of including a computer-controlled sensory generator, other than a display. However, Launey et al. discloses a system and method of providing an expandable home automation controller that supports multiple numbers and multiple different types of data communications with both appliances and subsystems. Referring to Fig. 1, the system is build around a microcomputer containing a central processor (10) [column 7, lines 44-52]. The central processor (10) is connected, by means of a data bus, or its equivalent, through a plurality of standard or custom interfaces to either control each of the subsystems automated within the home environment or to transmit or receive either data or instructions from within the home environment (claims **21, 22**) [column 7, lines 57-62]. The central processor (10) may also be preferable connected to a second parallel interface (24b) by means of the data bus (12). The parallel

interface (24b) communicates directly with a process control system (26b) made up for a relay input/output board, analog input board, or a digital input/output board [column 8, lines 50-60]. Both the relay output board and the input/output board may be connected to the electrical appliances or devices (31) such as door locks, security gates, lawn lights (claim 27), speakers (claim 23), or any other switch-controlled device. The relay output and input/output boards may also be connected to the plumbing related systems (33) such as showers, faucets, pools, spas, and foundations [column 8, lines 62-68]. The analog board may be connected directly to the analog sensors (29), which provide a voltage output indicating, for example, temperature (claim 28), humidity, pressure, light level, distance, vibration (claims 24, 25), air quality, or any other useful parameter for automation purposes (claim 26). The input/output board may also be connected to the digital sensors (27), such as security sensors, pressure mats, driveways sensors, status relays, or other digital indicator devices [column 9, lines 1-8].

Therefore, it would have been obvious to one in the art to combine the automation controller of Launey et al. with the virtual display assembly of Richey in view of Ohshima et al. because the additional sensory (e.g. sound) enhances the virtual environment to portray to the user that he/she is in a real atmosphere.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Rackham (US Patent No. 6,386,985 B1)

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michelle K. Lay whose telephone number is (571) 272-7661. The examiner can normally be reached on Monday - Friday, 7:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi can be reached on (571) 272-7664. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Michelle K. Lay
Patent Examiner
Art Unit 2672

10.24.2005 mkl *u.*


RICHARD HJERPE 10/26/05
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600